

REPORT OF THIRTY-SECOND ANNUAL MEETING OF THE OHIO ACADEMY OF SCIENCE

The Thirty-second Annual Meeting of the Ohio Academy of Science was held at Ohio State University, Columbus, April 14 and 15, 1922, under the Presidency of Professor Raymond C. Osburn. Eighty-seven members were registered as in attendance; forty-six new members were elected.

On invitation of the geologists of the Michigan Academy of Science, a number of the members of the Geological Section of the Ohio Academy, under the Vice-Presidency of Professor Kirtley F. Mather, participated in a joint field meeting, held June 3 and 4, for the study of the glacial geology and Silurian rocks of Southeastern Michigan and adjoining portions of Ontario. The party was under the leadership of Mr. Frank Leverett, of the University of Michigan, and Professor W. H. Sherzer, of the Michigan State Normal College. Professor J. E. Carman, of Ohio State University, collaborated in directing the investigations at certain localities.

GENERAL PROGRAM.

FRIDAY, APRIL 14.

9:30 A. M.—Business Meeting.

11:00 A. M.—Reading of Papers in General Session.

12:30 P. M.—Luncheon.

2:00 P. M.—Demonstrations.

2:30 P. M.—Joint session with the Ohio State University Chapter of Sigma Xi; Illustrated Lecture by Professor L. R. Jones, of the University of Wisconsin, on "Disease and Disease Resistance in Plants."

3:30 P. M.—Reading of Papers in Sectional Meetings.

6:00 P. M.—Dinner.

7:30 P. M.—Address by the President of the Academy, Professor Raymond C. Osburn, Ohio State University, on "Some Common Misconceptions of Evolution."

9:00 P. M.—Adjourned Business Meeting.

SATURDAY, APRIL 15.

- 9:00 A. M.—Adjourned Business Meeting.
10:00 A. M.—Illustrated Lecture by Professor Dayton C. Miller, Case School of Applied Science, on "Ether-Drift Experiments at Mount Wilson, California."
11:00 A. M.—Reading of Papers in General Session.
12:30 P. M.—Luncheon.
2:00 P. M.—Demonstrations.
2:30 P. M.—Reading of Papers in Sectional Meetings.

SATURDAY, JUNE 3, and SUNDAY, JUNE 4.

Joint Excursion of Section for Geology, with Geologists of Michigan Academy of Science.

MINUTES OF BUSINESS MEETINGS.

The first business session was called to order by President Osburn at 9:30 A. M., on Friday, April 14. Adjourned sessions were held after the presidential address on Friday evening and at 9:00 A. M. on the following day.

The appointment of the following committees for the meeting was announced by the chair:

Committee on Membership—A. P. Weiss, W. G. Stover, F. C. Blake.

Committee on Resolutions—S. I. Kornhauser, Stephen R. Williams, L. G. Westgate.

Committee on Necrology—G. D. Hubbard, Herbert Osborn, F. L. Landacre.

The following Auditing Committee was elected by the Academy: M. E. Stickney, F. L. Landacre.

The following Nominating Committee was elected by the ballot of the Academy: W. M. Barrows, W. G. Stover, G. D. Hubbard, Alpheus W. Smith, F. L. Landacre, H. E. Burt.

Report of the Secretary.

The following report by the Secretary was received and ordered filed.

April 4, 1922.

To the Ohio Academy of Science:

The work of the Secretary for the year has been largely routine, but a few items are of some general interest.

A brief report of the Thirty-first Annual Meeting was prepared for *Science*, and appeared in the issue for September 23.

The Secretary was present to represent the Academy at the meetings of the Council of the American Association for the Advancement of Science, held in connection with the Toronto meeting.

The blank form for nomination of fellows was prepared, as directed, and mailed to all members in connection with the preliminary announcement of this meeting. The certificate of election to fellowship is in preparation; a proof was submitted to the Executive Committee for suggestion and criticism at the meeting of April 13.

The following letter was received from the Wisconsin Academy of Science, Arts and Letters:

Sept. 15, 1921.

The Secretary, Ohio Academy of Science, Columbus, Ohio.

MY DEAR SIR: We take great pleasure in sending to your institution, under separate cover, the bronze medallion issued in 1920 in commemoration of the fiftieth anniversary of the founding of the Wisconsin Academy, 1870-1920.

We ask you to accept it with our fraternal greetings.

A brief description of the medallion, with a short statement of its significance, is sent with the medallion itself. A fuller account is printed in the Fiftieth Anniversary volume, Volume XX of the Transactions of the Academy.

Yours very truly,

CHANCEY JUDAY, *Secretary.*

The medallion was duly acknowledged, and has been placed with the archives of the Academy in the Library Building.

A letter from V. A. Latham, corresponding secretary of the State Microscopical Society of Illinois, contains the following sentences, asking for the co-operation of members of the Academy:

"Is there any one you know of who might have duplicates of Scientific Journals, especially Microscopy? We are anxious to complete ours and the John Crerar Library, and any help through your Academy would be appreciated. We had so many former micro-workers in your state who were members." Dr. Latham may be addressed at 1644 Morse Ave., Rogers Park, Chicago.

Several years ago the Secretary suggested the desirability of concentrating the administrative work of the Academy in Columbus by the election of a Columbus man as secretary. This suggestion may well be repeated at this time. The increase in membership, the organization of new sections, and the affiliation with the American Association for the Advancement of Science have so materially increased the routine work of the secretary and treasurer that the Academy should look forward in the very near future to the organization of a regular Academy headquarters in Columbus, with salaried secretary and treasurer, or, probably better, a secretary-treasurer, for efficiency would be conserved in various ways by the combination of the two offices. This matter is further considered in the report of the Executive Committee.

Respectfully submitted,

EDWARD L. RICE, *Secretary.*

Report of the Treasurer for the Year 1921-1922.

The report of the Treasurer was received as follows and referred to the Auditing Committee whose report is appended.

Balance in Hayden-Clinton Bank March 17, 1920, as previously reported.. \$515.74
 Received from C. W. Reeder, Librarian, for 1920-1921 sales of publications 12.95
 Received from members for dues to A. A. A. S. and the Ohio Academy.. 1,174.10

Total.....	\$1,702.79
Less checks.....	1,085.27

Balance in Bank April 12, 1921.....	\$617.52
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The Disbursements have been as follows:

To E. L. Rice for Secretarial expenses.....	\$ 37.81
To L. H. Tiffany for expenses of Business Manager.....	5.00
To Eunice Evans for assistance for the Treasurer.....	7.75
To Postmaster, Columbus, for letter-head envelopes.....	19.46
To Independent Print Shop.....	30.75
To Spahr & Glenn.....	101.00
To B. E. Livingston for dues for members of the A. A. A. S.....	633.50
To L. H. Tiffany for the Ohio Journal of Science.....	250.00

Total.....	\$1,085.27
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Balance carried forward.....	\$ 515.74
Cash deposited.....	1,187.05

	\$1,702.79
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DR.

As itemized expenditures.....	\$1,085.27
Balance in hand.....	617.52

There has been received from C. W. Reeder \$37.00 for 1921-1922 sale of publications of the Ohio Academy of Science, which is not included in the account as given.

Below is the statement of the Manager of Ohio Journal of Science, Mr. L. H. Tiffany, which your Treasurer desires to have included in this report, feeling that the members of the Academy are entitled to know the present financial status of the Journal.

FINANCIAL STATEMENT OF OHIO JOURNAL OF SCIENCE.
 (Volume XXI, 1920-21. The Ohio Journal of Science.)

Receipts—

Balance from J. S. Hine, 1920-21.....	\$ 19.15
Separates from Vol. XXI.....	286.91
Extra copies of "Journal".....	9.10
Subscriptions to Vol. XXI.....	16.00
Ohio State Univ. Annual Allowance.....	500.00

Total Receipts.....	\$831.16
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Expenditures:

Bucher Engr. Co., plates, half-tones, etc.....	\$127.50
Spahr & Glenn, printing.....	500.00
Postage and express.....	60.82
Envelopes, bill heads, etc.....	7.90

Total expenditures.....	\$696.22
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Balance on hand, 1920-21.....	\$134.94
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Cost of printing "Journal".....	\$830.25	
Cost of printing separates.....	252.00	
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Total printing cost.....		\$1,082.25
Total cost of printing.....	\$1,082.25	
Paid on account.....	500.00	
		<hr/>
Unpaid.....		\$582.25
Balance on hand.....		134.94
		<hr/>
Deficit for 1920-21.....		\$447.31

The deficit indicated for 1920-1921 for the Ohio Journal of Science has been partially relieved by the payment of \$250. This is the amount derived from the dollar of the individual membership fee toward the upkeep of the Journal, as provided for in the Constitution of the Ohio Academy of Science. It should be noted that this is the amount derived from membership dues for 1921-1922 and advanced to the Business Manager, in order that he might pay current expenses. As more dues are paid, more money will be advanced, but your Treasurer is not empowered to advance more than the amount allowed by the Constitution. He feels that definite measures should be provided for permanently relieving the embarrassment of the Ohio Journal of Science, which has been and is well managed and has only fallen into debt because of the rising costs of publication. The Journal has a large and growing circulation and is a medium for the communication of papers of the members of the Academy within the State and abroad. It offers rather prompt publication, a desideratum well worth considering in these days of over-crowded journals, many of which face a more serious deficit than our own.

There are two proposals which the Treasurer desires to offer as a means of removing the deficit of the Journal. They are both temporary relief measures. The first is that money be advanced from the Research Fund. This is the more attractive proposal, because the product of scientific research must sooner or later be communicated to some scientific audience. The research fund is open to members of the Academy who desire aid for the completion of their studies. It would be of aid to the worker and his audience alike, if the fund should be drawn upon to remove the deficit of the Journal.

The second proposal is that the Treasurer be empowered to remove the deficit. This has the objection that the measure amounts to the equivalent of increasing, to the subscriber, the cost of the Journal, even though this increase be a temporary one. It is to be distinctly understood that the Treasurer is opposed to any permanent increase in the cost of the Journal. The Editor, Dr. F. H. Kreckler, has the problem of keeping up the standard of the Journal at the least cost, and has not indicated that the price of the Journal to subscribers is too low. The two proposals are placed before the Academy with the request that action be taken.

In the meantime an active campaign for more funds should be carried on. An increase in the number of members is greatly desired. An

appeal for individual help for the Journal from persons interested in its welfare and for an increased subsidy from the Ohio State University have both been suggested. No definite action has been taken on these suggestions as yet.

A. E. WALLER, *Treasurer.*

The financial portion of the above report has been examined and found correct.

M. E. STICKNEY,
F. L. LANDACRE,
Auditing Committee.

Report of the Executive Committee.

The report of the Executive Committee was received as follows and ordered filed.

April 14, 1922.

To the Ohio Academy of Science:

The Executive Committee has met twice since the last Annual Meeting of the Academy. At the first meeting, December 17, Messrs. R. C. Osburn, Waller, Alexander and Rice were present, with Professor Herbert Osborn as guest; at the second meeting, last evening, all members of the Committee were in attendance. Several matters of business have also been handled through correspondence.

That the date of the Annual Meeting was set for April 14 and 15, in Columbus, is already sufficiently well known.

Dean George F. Arps was appointed Vice-President for Psychology, to succeed Professor Rudolph Pintner, resigned.

Twenty-nine applications for membership have been approved during the year, subject to ratification by the present meeting.

A communication was received from Arthur MacDonald, under date of October 11, 1921, urging the adoption of a resolution calling upon Congress to concentrate "the scientific bureaus of the Government under the jurisdiction of the Board of Regents of the Smithsonian Institution, with the view to developing Government science to the highest possible efficiency, by affording scientific workers permanent tenure of office, greater freedom in investigation, non-interference of politics, and adequate salaries." Your Committee deemed it unwise to commit the Academy to this policy.

The Committee recommends that the Academy take action urging upon the colleges of Ohio the desirability of a uniform spring vacation, to facilitate for instructors the attendance upon the meetings of the Academy and other professional societies composed wholly or in considerable part of college men.

The Committee recommends the amendment of Chapter 1, Section 1, of the By-laws by the addition of the clause: "members who have paid regular dues in the Academy for twenty-five years shall also be classed as life members, and shall be relieved of further financial obligations."

The Executive Committee has considered the desirability of modifications of the status of the secretary and treasurer of the Academy in line with the suggestions of the Secretary's report. Such readjustments may make desirable the combination of the two offices and the addition to the Executive Committee of a third elective member. In order that such action may be possible at the next annual meeting, in case it is deemed desirable, the Committee desires that this report be considered as notification of proposed amendment of the constitution. The Committee further recommends the reference of the entire matter to the incoming Executive Committee for further consideration and report.

Respectfully submitted,

EDWARD L. RICE, *Secretary,*
For the Committee.

Report of the Publication Committee.

The following report of the Publication Committee was received and ordered filed.

The Annual Report of the Thirty-first Meeting, Proceedings, Vol. VII, Part 6, contained 54 pages, including the President's address, which also appeared in the November, 1921, number of the Ohio Journal of Science.

It is recommended that beginning with this year the President's address shall be published in the Ohio Journal of Science as soon after the Annual Meeting as possible, that it shall not be offered for publication elsewhere until it has appeared in the Journal and that it shall not be published in the Annual Report.

It is further recommended that the Secretary's report shall be published in the Ohio Journal of Science in the summer or autumn, so that the Annual Report can be printed in December.

It seems desirable also to publish any special address, delivered on invitation before the Academy, in the Ohio Journal of Science.

Since the membership of the Academy is increasing rapidly it is the intention of the publication committee to print 750 copies of the Annual Report and of any special papers, instead of 500 as heretofore.

Respectfully submitted,

JOHN H. SCHAFFNER, *Chairman.*

Report of the Library Committee.

The following report of the Library Committee was received and ordered filed.

April 14, 1922.

To the Ohio Academy of Science:

The Library Committee begs leave to submit the following report:

1. The annual report of the Thirty-first meeting of the Academy, held in 1921, was published in the Ohio Journal of Science for November,

1921, and later reissued with additions as part six of volume seven of the Proceedings of the Academy. Copies of this number were mailed to every person on the membership list, and to the seventy-one scientific societies on the exchange list.

2. The sale of publications during the year has been above the average, the amount received being \$37.00. This sum has been turned over to the treasurer.

3. Since the members of the Academy are interested in the development of library resources in the natural sciences, the Committee wishes to take this opportunity to call attention to several very notable additions to the collections of the Ohio State University Library made during the year:

- (a) Academie des Sciences (Paris) Memoires, 1666-1770.
- (b) Academie Imperiale des sciences de Saint Petersburg Memoires et bulletin. Complete to date.
- (c) K. Akademie der Wissenschaften (Vienna) Denkschriften philosophisch-historische Klasse, v. 1-62, 1850-1918. Sitzungsberichte philosophisch-historische Klasse, v. 1-180, 1847-48—1915-16.
The Library already owns the Denkschriften and Sitzungsberichte of the Mathematisch-naturwissenschaftliche Klasse.
- (d) Annales des sciences naturelles, zoologie et botanique, 1824-1908 in 316 volumes. (This is one of the three complete sets in the United States).
- (e) Biologia Centrali—Americana; or, Contributions to the knowledge of the fauna and flora of Mexico and Central America; ed. by F. D. Godman and Osbert Salvin, 63 v. 1879-1915.
- (f) Journal of Botany, British and foreign, v. 1-46, 1863-1908.
- (g) Linnean Society of London, Transactions, 1791-1916, 55 vols.
- (h) Societe d'anthropologie de Paris, Bulletin, 57 vols. 1860-1915.
- (i) Zoological Society of London. Transactions, v. 1-20, 1833-1915.

Needless to say, all members of the Academy are welcome, not only to the use of these new sets, but also to all the sources in the scientific field which are owned by the University Library.

Very respectfully,

C. W. REEDER,
For the Committee.

Report of the Trustees of the Research Fund.

The following report of the Trustees of the Research Fund was received and ordered filed. The financial portion of the report was referred to the Auditing Committee, whose report is appended.

To the Ohio Academy of Science:

The Trustees of the Research Fund of the Academy submit the following report for the period from March 1st, 1921, to March 28th, 1922.

RECEIPTS.	
Cash on hand March 1, 1921, as per last report.....	\$870.90
Check from Mr. McMillin.....	250.00
Interest on Liberty Bonds.....	25.50
	<hr/> \$1,146.40
EXPENDITURES.	
Paid on grants:	
Nov. 30, 1921, Paul B. Sears.....	\$ 6.20
Feb. 14, 1922, James S. Hine.....	50.00
	<hr/> \$56.20
ASSETS.	
Cash on hand March 28, 1922.....	\$1,090.20
Liberty Bonds at par.....	600.00
	<hr/> \$1,690.20
LIABILITIES.	
Grants: Paul B. Sears.....	\$ 46.36
L. B. Walton.....	100.00
W. H. Bucher.....	25.00
	<hr/> \$171.36
Excess of cash assets over liabilities.....	\$918.84

Two or three recent applications for grants are under consideration. Vouchers and receipts for the verification of this report are submitted herewith.

Respectfully,

T. C. MENDENHALL,
HERBERT OSBORN,
GEORGE D. HUBBARD,
Trustees.

Examined and found correct.

M. E. STICKNEY,
F. L. LANDACRE,
Auditing Committee.

Report of the Committee on Legislation.

The Committee on Legislation reported that no further action had been taken since the last annual meeting, but recommended that the committee be continued with a view to presenting desired legislation to the next General Assembly.

Report of the Committee on State Parks and Conservation.

In an oral report of progress, the chairman of the Committee, Professor Herbert Osborn, mentioned the great advance that has been made in the acquisition of protected tracts by the Division of Fish and Game of the State Department of Agriculture and by the State Forester, and emphasized the cordial attitude of these officers toward the permanent preservation of the native fauna and flora of these tracts. He also called attention to the very valuable list of Ohio areas desirable for preservation compiled by Dr. E. Lucy Braun, representing the Ecological Society of America, and urged the co-operation of the Academy membership in the extension of this list by the report of additional interesting localities.

Director Taber, of the State Department of Agriculture, was invited by the committee to address the Academy, and spoke very interestingly of the present condition of the tracts owned and leased by the State as game preserves and the plans of the Department for their development and control. He expressed a keen interest in the preservation of all forms of native plant and animal life in these tracts and the desire that the Academy assist, through its Committee on State Parks and Conservation and its individual membership, by the suggestion of desirable tracts and control measures.

On his own request, Professor M. M. Metcalf was excused from the committee, and Professor E. R. Hayhurst elected in his place. The committee now consists of Herbert Osborn, chairman, J. E. Carman, E. R. Hayhurst, F. H. Herrick, C. G. Shatzer, E. N. Transeau.

The following recommendations of the committee were approved by the Academy:

1. That the Committee on State Parks and Conservation be made a standing committee, and that the details concerning time of service and future elections be referred to the Executive Committee.
2. That the Academy favors the establishment of a State Commission on Parks and Conservation, composed of one representative each for the Division of Fish and Game of the State Department of Agriculture, the Division of Forestry of the Ohio Experiment Station, the State Board of Public Works, the State Archeological Society, the State Geological Survey, and the State Board of Health, and two representatives for the Ohio Academy of Science—one a botanist and one a zoologist.

3. That the duties of this commission shall include the following: To advise and co-operate in the selection of tracts desirable for state parks, forests, game refuges, and scientific reservations; to formulate regulations as to the manner in which such tracts may be used for recreational, historic, refuge, scenic, scientific, or other purposes; and to inaugurate measures for the most efficient development of the various tracts for the purposes agreed upon.

The Academy further voted to suggest that the committee consider the advisability of employing a salaried officer to promote conservation work in Ohio.

Election of Officers.

The following officers and committee members for 1922-23 were elected by the ballot of the Academy.

President—Professor A. P. Weiss, Ohio State University, Columbus.

Vice-Presidents:

Zoology—Professor C. G. Rogers, Oberlin College, Oberlin.

Botany—Dr. E. Lucy Braun, University of Cincinnati, Cincinnati.

Geology—Professor K. F. Mather, Denison University, Granville.

Physics—Professor R. C. Gowdy, University of Cincinnati, Cincinnati. (Professor Gowdy declined the vice-presidency, and Professor Alpheus W. Smith, Ohio State University, was appointed by the Executive Committee to fill the vacancy).

Medical Sciences—Professor C. F. Spohr, Ohio State University, Columbus.

Psychology—Dr. H. H. Goddard, Ohio Bureau of Juvenile Research, Columbus.

Secretary—Professor E. L. Rice, Ohio Wesleyan University, Delaware.

Treasurer—Dr. A. E. Waller, Ohio State University, Columbus.

Elective Members of Executive Committee—Professor R. C. Osburn, Ohio State University, Columbus; Professor Lynds Jones, Oberlin College, Oberlin.

Member of Publication Committee—Professor H. C. Sampson, Ohio State University, Columbus.

Trustee of Research Fund—Professor G. D. Hubbard, Oberlin College, Oberlin.

Member of Library Committee—Mr. C. W. Reeder, Ohio State University, Columbus.

Representatives on Editorial Board of Ohio Journal of Science:

Zoology—Professor R. A. Budington, Oberlin College, Oberlin.

Botany—Professor Bruce Fink, Miami University, Oxford.

Geology—Professor G. D. Hubbard, Oberlin College, Oberlin.

Physics—Professor S. J. M. Allen, University of Cincinnati, Cincinnati.

Medical Sciences—Professor F. C. Waite, Western Reserve University, Cleveland.

Psychology—Professor H. A. Aikins, Western Reserve University, Cleveland.

Election of Members.

The Membership Committee reported seventeen names for election to membership; twenty-nine additional names, previously approved by the Executive Committee and marked with (*) in the following list, were presented for ratification. All were elected, as follows:

- *ALLEN, WILLIAM RAY; Zoology, Ecology, Municipal University of Akron, Akron.
- *AUTEN, MARY; Zoology, Entomology, Botany; Botany and Zoology Bldg., Ohio State University, Columbus.
- *AXEL, ROBERT; Psychology; 980 Clinton St., Bronx, New York, N. Y.
- *BARINGER, JOHN W.; Plant Pathology, Botany; Dept. of Botany, Ohio State University, Columbus.
- BULGER, J. W.; Entomology, Plant Pathology, Zoology; Dept. of Zoology and Entomology, Ohio State University, Columbus.
- *CONREY, G. W.; Geology; Soils Dept., Ohio State University, Columbus.
- ELWOOD, P. H.; Landscape Architecture; Ohio State University, Columbus.
- *ESPER, ERWIN A.; Psychology; Ohio State University, Columbus.
- *FARNSWORTH, PAUL R.; Psychology; 128 W. Tenth Ave., Columbus.
- *GORDON, ROBERT B.; Botany, Ornithology; 478 W. Seventh Ave., Columbus.
- GOSSARD, H. A.; Entomology, Zoology; Wooster.
- *HALSTED, FRANCES J.; Psychology, Physiology; 1 Thirteenth Ave., Columbus.
- *HARTMAN, GRACE L.; Botany, Physiology; 1868 Rosalind Ave., East Cleveland.
- *HATCH, ELIZABETH M.; Psychology; 9 Twelfth Ave., Columbus.
- HOSKINS, R. G.; Physiology; 710 N. Park St., Columbus.
- *HUMPHREY, SYLVESTER S.; Botany, Plant Pathology; Dept. of Botany, Ohio State University, Columbus.
- *ISRAEL, HAROLD; Psychology; 22 Fifteenth Ave., Columbus.
- *KLECKNER, M. E.; Chemistry; Heidelberg University, Tiffin.
- *KOCH, BERTHE COUCH; Psychology; 303 Whittier St., Columbus.
- LEE, M. O.; Zoology; Dorset.
- MCCORMICK, ROBERT N.; Zoology; 161 W. Tenth Ave., Columbus.
- *MCGLENCHEY, CHLOIE D.; Psychology; 52 Pacemont Road, Columbus.
- *MADISON, HAROLD L.; Botany, Zoology; 2289 Grandview Ave., Cleveland Heights.
- *MANLEY, R. M.; Physics, Chemistry, Structure of Universe; 738 Schofield Bldg., Cleveland.
- MARQUART, J. ROGER; Zoology, Botany; 900 N. Limestone St., Springfield.
- MYER, BERNARD S.; Botany; Dept. of Botany, Ohio State University, Columbus.

- NEISWANDER, CLAUD R.; Zoology; Rawson.
- *PARROT, G. H.; Biology, Geology, Physics; 41 E. Eighth Ave. Columbus.
- *PETERS, HAROLD S.; Ornithology, Botany; 150 W. Fourth Ave., Columbus.
- *POLKOWSKI, ANNA; Psychology; 52 Pacemont Road, Columbus.
- *PRESSEY, MRS. LUELLA W.; Psychology; Apt. 18, Indianola Courts, 1778 N. High St., Columbus.
- *PRESSEY, SIDNEY L.; Psychology, Psychiatry; Dept. of Psychology, Ohio State University, Columbus.
- RAUP, HUGH M.; Zoology, Botany; 1845 N. Fountain Blvd., Springfield.
- RUNNELLS, HARMON A.; Botany; Botany Dept., Ohio State University, Columbus.
- SECREST, EDMUND; Forestry; Ohio Experiment Station, Wooster.
- SETTERFIELD, HUGH; Zoology, Botany; Myers Hall, Springfield.
- SISSON, SEPTIMUS; Veterinary Medicine, Anatomy; Ohio State University, Columbus.
- SMITH, ALPHEUS W.; Physics; Ohio State University, Columbus.
- SMITH, ALVA W.; Physics; Ohio State University, Columbus.
- SMITH, RUSSELL M.; Chemistry, Botany; 69 Neal Ave., Newark.
- *SPENCER, HERBERT; Entomology, Zoology, Ecology; Botany and Zoology Bldg., Ohio State University, Columbus.
- *STAUFFER, A. S.; Botany; 220 S. Main St., Ada.
- *STOCKDALE, PARIS B.; Geology; Dept. of Geology, Ohio State University, Columbus.
- *VAN HORN, FRANK R.; Geology; Case School of Applied Science, Cleveland.
- *WEMBRIDGE, MRS. ELEANOR; Psychology; 1681 Fulton Road, Cleveland.
- *WEMBRIDGE, HARRY; Psychology; 1681 Fulton Road, Cleveland.

Report of the Committee on Election of Fellows.

The following report of the Committee on Election of Fellows was accepted and ordered filed.

April 14, 1922.

To the Ohio Academy of Science:

A meeting of the Committee on Election of Fellows was held on the evening of April 13th. Five of the joint committee were present; four were represented by duly authorized proxies; two were absent without representation, although the proxy of one arrived just after the close of the meeting.

Sixteen nominations were received by the committee. In the consideration of these nominations the committee was guided by the principles laid down last year—that members should not be elected to fellowship until one year, at least, after election to membership, and that resident members should not be elected to fellowship who are not showing an active interest in the work of the Academy.

Eleven of the nominees received the necessary nine votes (unanimous for those present at the meeting), and were duly elected to fellowship. The newly elected fellows will receive personal notification, and the list will be published in the Annual Report.

EDWARD L. RICE, *Secretary,*
For the Committee.

The list of members elected to fellowship is as follows:

ANNETTE F. BRAUN	KIRTLEY F. MATHER
E. E. CLAYTON	SUSAN P. NICHOLS
W. C. DEVEREAUX	BRADLEY M. PATTEN
HENRY H. GODDARD	JASPER D. SAYRE
CLARENCE H. KENNEDY	ALPHEUS W. SMITH
FRANK R. VAN HORN	

Report of the Committee on Resolutions.

The following message and resolutions were presented by the Committee on Resolutions and adopted by the Academy. The message was transmitted to Mr. McMillin in a night letter, and reached him on his seventy-eighth birthday, April 16, the day after the Academy meeting. Mr. McMillin's reply follows the telegram.

(1) Message to Mr. Emerson McMillin, Darlington, N. J.

The Ohio Academy of Science in its thirty-second annual meeting in Columbus desires to extend to you on the occasion of your seventy-eighth birthday its heartiest congratulations, and wishes to express to you its appreciation of your continued support of scientific research through the Academy.

REPLY OF MR. McMILLIN.

DARLINGTON, MAHWAH, NEW JERSEY, April 18, 1922.

DEAR MR. SECRETARY:

Your telegram conveying the Birthday Greetings of the Ohio Academy of Science was received on time, and was the best tonic I have received during the last fifteen months of almost continuous illness. I do thank you and the Academy most sincerely.

EMERSON McMILLIN.

EDWARD L. RICE, *Secretary.*

(2) The Ohio Academy of Science wishes to express to the Local Committee and to the authorities of Ohio State University its appreciation for the hospitality extended to the Academy on the occasion of its thirty-second annual meeting.

(3) The Academy wishes to thank Dr. L. R. Jones for his interesting and instructive address on "Disease and Disease Resistance in Plants" delivered before the Academy.

(4) To Dr. Dayton C. Miller the Academy wishes to express its thanks for his stimulating address on "Ether-Drift Experiments at Mount Wilson, California."

S. I. KORNHAUSER,
S. R. WILLIAMS,
For the Committee.

Report of the Committee on Necrology.

The following report of the Committee on Necrology was adopted by the Academy and ordered filed.

BIOGRAPHICAL SKETCH OF GEORGE FREDERICK WRIGHT

By GEORGE D. HUBBARD,*
Oberlin, Ohio.

In the passing of Professor George Frederick Wright a long life of active, productive work has closed and there goes from our midst one who has been an example and an inspiration to us all. Dr. Wright was born in Whitehall, New York, January 22nd, 1838. His death occurred on April 20th, 1921, of heart failure following influenza. He came of sturdy New England Puritan stock. On his mother's side, the family had been on American soil since 1640; on the father's side perhaps equally long. Mr. Wright's father was a farmer, and this son, one of a large family, acquired his early education in the local schools. At the age of seventeen he had gone as far as the district school could take him, and went out to teach a term in the only kind of school he knew.

It was in 1855, while still only seventeen, that he made the long journey from the old family home at Whitehall to the little college of Oberlin. Four years were spent in the undergraduate course and three in the theological seminary. These seven years came at a time in the history of Oberlin, as well as of the nation, when the social and even the political order trembled, and great questions were before the people. Mr. Wright found Oberlin a splendid place in which to feel his way in the discussion and solution of theologic, scientific, social and political questions, and he always took an intelligent part in such activities. These seven years not only gave him his college and seminary course, but laid the foundations for his future career. They brought out many of the qualities that were subsequently to give him the place he took in the world.

His first public service was a ten-year pastorate of the Congregational Church at Bakersfield, near St. Albans, in northwestern Vermont. His next residence was nearly an equal period at Andover, Massachusetts, as pastor of the Free Church, a residence which threw him in close contact with the stimulating faculty of Andover Theological Seminary. The friendships and intercourse of this period proved of very great value in Mr. Wright's life work. Not only did he meet the men of the Andover faculty, but he came in close contact with scholars of Boston, New Haven, and New York, to whose influence he readily responded. From Andover he was called to Oberlin in 1881 to become

*The author is quite unfamiliar personally with all of Professor Wright's experience save the last fifteen years, but is very happy to have known him so well in these later years. Owing to this lack of first hand information, extensive and frequent use has been made of life sketches prepared for other purposes, even to the borrowing of phrases and sentences. Credit and thanks are hereby given for all.

professor of New Testament Language and Literature in the theological seminary. Eleven years later, through the interest and generosity of a friend who established a chair for the purpose, Prof. Wright was made head of the department of The Harmony of Science and Revelation. In 1907 he reached the retiring age and became Emeritus Professor in the same chair until his death. Thus he had twenty years of pastoral work, twenty-six years of seminary teaching and fourteen years as Emeritus Professor.

When Mr. Wright began his first pastorate he set apart his mornings for scientific study, and they were as carefully preserved for that work as any student preserves his best hours to prepare for his class work. Part of his time was given to field work, a considerable portion to translation from Greek and German, work which greatly increased his proficiency in foreign languages. His studies took him through much theological and scientific literature, among which was Darwin's "Origin of Species." He did very little writing for publication until he entered the second pastorate at Andover, but here the papers began to come at frequent intervals. A few dealt with glacial problems, many with theologic and philosophic questions, and even here there began the long series of papers which came from his pen expressing his belief that there was nothing in science to hinder one's faith in God, Jesus and miracles. Although a strong champion of the theory of evolution, he was also a firm believer in evangelical Christianity. He believed in applying pragmatic tests to Christianity as much as to scientific truth, and this, much to the advantage of both. His scientific studies confirmed his religious conviction and theological conclusions. Open to truth from any source, research or revelation, he believed that no truth could be contradictory, since all was God's, whether expressed in His works or word.

While Prof. Wright's scientific training was very meagre, his scientific interest was always to the front. The home of his first pastorate was on a sand plain with esker and kame connections. This was in the days when the glacial theory for the drift had only begun to make its way. Mr. Wright studied his immediate environment until he became certain that it was the work of a sub-glacial stream. His residence at Andover was also on a prominent glacial feature known as Indian Ridge. It had been popularly attributed to the work of the Indians, but Mr. Wright thought differently and in 1873 in the Bulletin of the Essex Institute he published his first geologic paper. It covered only three or four pages, but it interpreted the ridge as wholly of glacial origin and predicted the finding of its continuation for many miles to the north. His paper inspired observers, and within a few months he had several invitations to visit localities in line with Indian Ridge. These he followed up and established the explanation which he had suggested.

These early radical interpretations of the drift and of many of its forms earned the approval of Asa Gray and Clarence King, and this placed Wright's work in the front rank. He collaborated later with J. P. Leslie and with H. C. Lewis, of the Pennsylvania Geologic Survey

and with G. H. Cook, of the New Jersey Geologic Survey. He traced the moraines and ancient ice borders across New Jersey, Pennsylvania, Ohio, Indiana, Illinois, mostly in the eighties, and published in 1890 Bulletin 58 of the U. S. G. S., summarizing his results. In later years he studied glaciers and the products of their work in Alaska, Greenland, the British Isles, Holland, Belgium, and France, and journeyed completely across Siberia and Russia in his quest for glacial phenomena. These researches gave him the basal material upon which he built the superstructure which made him one of the first men of his age in glaciology.

His field studies were not confined to the work of glaciers, for from the earliest to the end, he was intensely interested in the remains of man that he found associated with the drift. This material was sought and found in many places where he studied the drift itself. Nor did such interest and research stop with man and the drift, for he has been an archeologist in all his travels in Italy, Greece, Palestine, in the region east of the Caspian and in his long journey to Siberia, as well as in the classic fields of western Europe. One of his books deals with the ice age in North America; another, the antiquity of man, and a third, man and the glacial period. These two lines of research were inseparably connected.

While his ministry covered but twenty years and his educational work technically but twenty-six, his research work covered his whole life. His educational work began with the district school before he came to college, was continued in several terms of vacation teaching while in college, and was taken up in his own seminary about twenty years after his graduation. Many of those who were in his classes or knew him as a teacher speak of his kindness of heart, breadth of scholarship, and, above all, his keen interest in the students. He was always looking for the best in them, suggesting lines of work for which he thought they were adapted, and was continually rejoicing in the successes of young people whom he knew.

The second professorship at Oberlin which was given to Prof. Wright in the seminary was established by a friend of the institution who stipulated that the holder should teach but half the year and travel the other half. It was this arrangement which opened up to Mr. Wright the opportunity of travel in Europe in 1892, Greenland in 1894, and his round-the-world trip in 1900-1901. In this latter trip, covering nearly 30,000 miles, he sailed from the United States west coast and after spending some time in Japan, visited Vladivostok and Manchuria, Peking and Kalgan, and made the long journey by rail across Siberia to Irkutsk. From here he journeyed southward and westward through Merv and Samarkand, crossing the Caspian to Tiflis and the Caucasus Mountains, and then proceeded to Constantinople, Palestine, Egypt and southern Europe.

On this trip he was royally received in Japan and Russia, and gave a number of lectures in several places. In fact, Prof. Wright has always had the ability to give an entertaining, inspiring and instructive

address. No record of his platform performance has been found, but it is well known that he was always sought for public addresses on all kinds of occasions, both in his home town and far away. Within a few months of his death he spoke to a learned audience for an hour perfectly logically and without notes. He seemed to have the faculty of marshalling in his public addresses a wealth of information, all organized and laid away for any sudden emergency. While not eloquent, he spoke with convincing directness and clearness. His hearers knew he was thoroughly convinced of what he said. He never trifled with an audience, but took them fully into his confidence.

As an author and publisher Mr. Wright achieved more than many men who do nothing else. His published papers number some five hundred and fifty and his volumes sixteen, some of which were translated into foreign languages, and at least one copyrighted in England. His "Ice Age in North America" has been through six editions and is considered a standard work in its field. Other books have been through more than one edition. His "Story of My Life and Work," published in 1916, sums up many of the conclusions in science and theology which he had reached through his years of study and thought. It also gives a fairly complete bibliography of his papers, the first of which is entitled "Ground of Confidence in Inductive Reasoning," and appeared in 1871, when he was thirty-three years old. But four titles more appear in the next four years; then they come faster, and eight or ten, sometimes fifteen a year flow from his facile pen. Not a year passed but saw papers or book reviews added to his voluminous bibliography, and the last paper was prepared during his last sickness, which was on him for some thirty days.

Beside the papers and books which he prepared for the press himself, he was editor and really the life and heart of the magazine "Bibliotheca Sacra" for thirty-eight years, beginning in 1883. In the year 1900, he with two or three other men in Washington founded a second magazine, "Records of the Past," which continued for twelve years, and then after the publication of a very complete index, was merged in another magazine.

In music, too, he had an active interest. A member of the Oberlin Musical Union for almost forty years, he sang in many oratorio concerts. He brought back and put into shape for American use a number of Russian songs, and was one of three active editors for a very excellent church hymnal.

A cursory glance through the list of his papers reveals the marvelous range of his studies—apologetics, religion, theology and philosophy, politics, history, and biography, commerce, geography, travel, and aesthetics, besides his two great fields of glaciology and archeology. Some of his papers were conciliatory, some controversial; a few were critical, most of them constructive.

Professor Wright was fraternal in spirit and delighted in the fellowship and stimulus of co-workers, yet he has never amassed memberships in learned societies. His affiliations were as follows:

Fellow, American Association for the Advancement of Science.

Fellow, Geological Society of America.

Boston Society of Natural History.

Fellow, Essex Institute.

Ohio Archeologic and Historical Society, (Pres., 1908).

Fellow, Ohio Academy of Science, (Pres., 1899).

In later years he has been unable to attend our meetings annually, but his presence was always profitable and stimulating to the Academy.

Prof. Wright was many-talented, and hence many sided in his interests and pursuits. The amount of his work reveals both his unusual capacity for turning it off and his great intellectual ability. He had a mind in rare degree persistently active, versatile and productive, and he succeeded in gaining interesting and notable attention to his writings and lectures in these many fields, because he made real contributions at many points and always had an attractive way of stating his conclusions.

In his writing and public utterance he vigorously defended his conclusions, not from pride or love of controversy, but because he believed in them and because his conscience would not let him do otherwise. Whether in his familiar surroundings or in strange lands far afield, he was alert and resourceful, companionable and appreciative. No one can say that Professor Wright slighted or mistreated him or intentionally misjudged him. He was quiet, unobtrusive, but genial, winsome, and broad-minded. His clear-cut features, gracious dignity, and unfailing courtesy always made him a distinguished figure in whatever group he stood. He was sympathetic and straight-forward, simple and direct as a child in all his dealings with his fellow men, so guileless that he often could be imposed upon. He was honest and conscientious to the last degree himself and was loathe to believe anyone could be otherwise.

He was deeply religious by nature, a believer in reason in religion, and faith in science, and out of this combination came his power to make his greatest contributions to the thought of his generation. Buoyant and hopeful, always looking forward, his life was full of happiness and achievement, and ran strong to the end. He was the same companion, whether in the privacy of his own home or on a difficult field trip or in a formal public gathering. As he will be missed in scientific and theologic circles, so will he be missed at home in the community for which he always thought and worked. Such a man could not fail to be an inspiration and a tower of strength to his fellows who were permitted to know him.

CHARLES BROOKOVER.

By HERBERT OSBORN AND FRANCIS L. LANDACRE.

(This sketch was not presented at the meeting, but prepared later for publication in the Proceedings.)

In the death of Professor Charles Brookover, which occurred at Louisville, Kentucky, March 17, 1922, the Ohio Academy has lost one of its distinguished members, one who for many years was associated in the scientific and educational work of the state and contributed worthily to the academy.

He was born in Adams County, Ohio, March 11, 1870, and obtained his collegiate education at Ohio University, at Athens, obtaining the degree of B. Ped. and M. S. from that institution. He carried graduate work at Columbia University and University of Chicago, receiving his Ph. D. degree from the latter institution in 1910. He taught in Colorado College, Buchtel College at Akron, Medical Department of University of Arkansas, and in the University of Louisville, Louisville, Kentucky. Especially while at Akron, where he taught from 1901 to 1913, he was active in the scientific work of the state, attended our meetings with great regularity and was particularly active in the entertainment of the Academy at its Akron meeting in 1910. He spent a number of summers at the Lake Laboratory and was one of the most esteemed members of the staff, serving as Acting Director during the summer of 1914. He was a man of high ideals and a most cheerful, helpful disposition, and his death is mourned by a host of intimate friends and scientific associates.

His research work was largely upon neurology of the lower vertebrates; and in this field he was a recognized authority. His papers, while not numerous, were always thorough and conscientiously worked out. Very little if any, of his work will need revision. He was cautious about propounding hypothesis and always preferred to accumulate a mass of carefully verified facts and then leave the ultimate interpretation to some one else. He was not timid in drawing conclusions, but realized fully that the great need, especially in comparative neurology, is a large body of well established facts from which, finally, safe conclusions may be drawn. He was quite willing to contribute less than his colleagues provided that his contributions could be considered safe and as far as possible, final. What he might have done if he had been in robust health is uncertain. With a serious handicap in health, however, his contributions, especially to comparative neurology, are notable and a matter of pride to his friends and colleagues.

Amendment of Constitution.

ART. VI, SECTION 1. *Annual Meeting.* Amended to read: The date and place of the annual meeting shall be fixed by the executive committee, subject to such instructions as shall be determined by the Academy at the preceding annual meeting, and shall be announced by circular at least thirty days before the meeting. The details of the daily session of each meeting shall be arranged by the program committee and announced in the official program immediately before the meeting.

Amendment of By-Laws.

CHAPTER VI, SECTION 4. *Annual Report.* Amended to read: The Annual Report of the Academy, including list of officers, list of members, secretary's report of the annual meeting, and such other matter as the publication committee may determine, shall be printed as a separate issue by the publication committee.

CHAPTER VI, SECTION 7. *Publication of President's Address and Other Addresses.* New section, to read: The President's address shall be published in the Ohio Journal of Science as soon as possible after the annual meeting, and shall not be published in another scientific magazine until it has appeared in the Journal. Other addresses delivered before the Academy on invitation may be published in the Ohio Journal of Science.

Support of Ohio Journal of Science.

A detailed statement of the financial status of the OHIO JOURNAL OF SCIENCE is included in the report of the treasurer. The question of an additional temporary subsidy to the JOURNAL on the part of the Academy, to relieve the present deficiency, was referred to the executive committee with power.

Scientific Sessions.

The complete scientific program of the meeting follows:

PRESIDENTIAL ADDRESS.

Some common misconceptions of evolution.....RAYMOND C. OSBURN

PUBLIC LECTURES.

Disease and disease resistance in plants.....L. R. JONES
Ether-drift experiments at Mount Wilson, California.....DAYTON C. MILLER

PAPERS.

1. Some proposed state parks for Ohio. (15 min.).....J. ERNEST CARMAN
2. Segregation and man. (15 min.).....MAYNARD M. METCALF
3. American biological stains for microscopical preparations. (10 min.),
S. I. KORNHAUSER
4. Further studies in the cytology of *Anisolabis*. (10 min.) (Lantern),
S. I. KORNHAUSER
5. Notes on tropical photography. (5 min.).....WILLIAM RAY ALLEN
6. Some unsolved problems in tidal zone ecology. (By title)....Z. P. METCALF
7. Preliminary survey of certain aquatic habitats on the Bass Islands.
(20 min.) (Lantern).....F. H. KRECKER
8. Some results from a pure-line isolation culture of *Euglena gracilis* Klebs.
(5 min.).....W. J. KOSTIR
9. A source of material for study of parasites. (5 min.)..MAYNARD M. METCALF
10. Specific names for parasites. (5 min.).....MAYNARD M. METCALF
11. Studies of the biology of freshwater mussels. (15 min.)...WILLIAM RAY ALLEN
12. The relationship of the Syngnathidae. (15 min.).....JAMES E. KINDRED
13. A quarter century of bird migration at Oberlin. (30 min.)....LYNDS JONES
14. A case of unhindered growth of the incisor teeth of the woodchuck.
(10 min.) (Lantern).....STEPHEN R. WILLIAMS
15. A cicindelid from Lake Bennett, British Columbia. (10 min.)..LYNDS JONES
16. Factors influencing reproduction in the cucumber beetle (*Diabrotica*
vittata Fabr.) (10 min.).....W. V. BALDUF
17. Distribution and control of two important grape insects. (10 min.)
(Lantern).....D. M. DELONG
18. A study of the distribution of the leafhoppers of Presque Isle, Pa. (5 min.)
(Lantern).....D. M. DELONG
19. Emergence of a subimago Mayfly. (5 min.).....F. H. KRECKER
20. Some factors which have limited and directed insect evolution. (20 min.),
CLARENCE H. KENNEDY
21. Insect parasites and predators in spider's nests. (5 min.)....MARY AUTEN
22. The inter-relation of the Hessian fly (*Phytophaga destructor*) and one
of its parasites. (5 min.).....T. H. PARKS
23. Biological significance of the endocrines. (20 min.).....A. B. PLOWMAN
24. The effect of formaldehyde on the vitamins of milk. (5 min.),
A. M. BLEILE and R. J. SEYMOUR
25. Variation in the dandelion and some of its causes. (15 min.)....P. B. SEARS
26. A forest map of the Erie basin. (15 min.).....P. B. SEARS
27. The distribution of flowering plants on the smaller islands of Lake Erie.
(10 min.).....MALCOLM E. STICKNEY
28. The sexual nature of vegetative or dichotomous twins of *Arisaema*.
(15 min.).....JOHN H. SCHAFFNER
29. Influence of length of daylight on sex reversal in hemp. (15 min.),
JOHN H. SCHAFFNER
30. Some root and stem rots of clover in Ohio. (10 min.)..SYLVESTER S. HUMPHREY
31. Mosaic disease of tomato. (10 min.) (Lantern).....RAYMOND A. DOBBINS
32. Energy relations of plants. (15 min.).....E. N. TRANSEAU
33. Ecological distribution of grasses of North America. (15 min.)..E. L. STOVER
34. The algal food of fishes. (15 min.).....L. H. TIFFANY
35. Seedling blights of corn. (15 min.).....WILMER G. STOVER
36. The course of a plant disease. (15 min.).....WILMER G. STOVER
37. Extension work in plant pathology with special reference to the control of
corn and potato diseases. (20 min.).....E. E. CLAYTON

38. Barberry eradication in Ohio. (15 min.).....J. W. BARINGER
39. A study of variation in *Russula*. (5 min.).....H. C. BEARDSLEE
40. Geologic control of river navigation in northeastern Bolivia. (10 min.)
(Lantern).....KIRTLEY F. MATHER
41. The gorges of the Yangtze Kiang. (20 min.) (Lantern).....GEORGE D. HUBBARD
42. An inter-glacial gorge at Youngstown, Ohio. (12 min.).....G. F. LAMB
43. New points in the geology of Kelleys Island. (10 min.).....MILDRED FISHER
44. Some new data concerning the Bellefontaine outlier. (10 min.),
CLARENCE F. MOSES
45. The Pottsville formation of Ohio. (15 min.).....HELEN MORNINGSTAR
46. The Bainbridge caves. (10 min.).....ROBERT F. WEBB
47. The formation of box canyons in sandstone. (20 min.) (Lantern).....J. E. HYDE
48. Mineralization along the dikes of southern Vermont. (15 min.),
HARRIET G. BRAY and ALDEN E. EMERY
49. The Wheeler National Monument. (15 min.) (Lantern).....ROBERT F. WEBB
50. Colloids in geologic problems. (20 min.).....GEORGE D. HUBBARD
51. Dynamics of the lithosphere. (25 min.).....O. C. JONES and GEORGE D. HUBBARD
52. Drainage changes north of Lake Superior. (15 min.) (Lantern),
ROBERT F. WEBB
53. The Arctic as one of the centers of distribution of early Paleozoic faunas,
AUGUST FOERSTE
54. Meanders of Rio Securé and Rio Mamoré, Bolivia. (10 min.) (Lantern),
KIRTLEY F. MATHER
55. Iron molding sands of Ohio. (15 min.).....J. A. BOWNOCKER
56. Report on the Edward Orton Memorial Library. (5 min.).....J. A. BOWNOCKER
57. New fish remains from northwestern Ohio. (15 min.).....J. ERNEST CARMAN
58. Some fossils from the Sylvania sandstone. (10 min.).....J. ERNEST CARMAN
59. Type specimens of fossils in the geological museum at Ohio State University. (5 min.).....HELEN MORNINGSTAR
60. Stylolites: their nature and origin. (15 min.).....PARIS B. STOCKDALE
61. A mounted topographic map of Ohio. (5 min.).....G. W. CONREY
62. Notes on the Cincinnati.....W. H. SHIDELER
63. Forecasting the weather in the Ohio Valley. (20 min.),
WILLIAM C. DEVEREAUX
64. The electron theory of metals. (15 min.).....ALPHEUS W. SMITH
65. The effect of a unidirectional field upon alternating current permeability and energy loss in iron. (15 min.).....ALVA W. SMITH
66. Infra-red absorption bands as a means of determining molecular properties. (15 min.).....ERWIN F. LOWRY
67. Certain aspects of the problem of the static versus the dynamic atom. (15 min.).....F. C. BLAKE
68. The study of "illumination" in physics courses. (15 min.).....F. C. CALDWELL
69. Some interesting pictures in infra-red.....YALE ROOTS
70. Duriron—a product of Ohio industry. (35 min.) (Lantern).....JAMES WITHROW
71. A case of dual personality. (20 min.).....HENRY H. GODDARD
72. The field of psychology. (15 min.).....B. H. BODE
73. The theory of differential education as applied to the handicapped pupils in the elementary grades. (15 min.).....J. E. W. WALLIN
74. Qualitative clinical tests and psychological theory. (15 min.).....H. B. ENGLISH
75. Psychic complexes. (15 min.).....A. W. TRETTIEN
76. A comparison of initial and subsequent examinations of the same individual by the same psychological methods. (15 min.).....MABEL R. FERNALD

DEMONSTRATIONS.

1. (a) Common mole (*Scalopus aquaticus machrinus* Rafinesque) "embalmed."
(b) Internal parasites of same.....F. A. HANAWALT
2. Tracheation of *Lestes* nymph.....CLARENCE H. KENNEDY
3. A plerocercoid (larval) tapeworm from the liver of the squirrel—externally segmented.....STEPHEN R. WILLIAMS
4. The head of the woodchuck described in Paper 14.....STEPHEN R. WILLIAMS
5. Types of tomato mosaic.....RAYMOND A. DOBBINS
6. Seedling blights of corn.....WILMER G. STOVER
7. Stalactites in glacial sand and recent conglomerates from Canton, Ohio,
G. F. LAMB
8. Illumination charts.....F. C. CALDWELL